

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/728,958

12/08/2003

Jong Han Park

P24649

9028

7055

7590

09/02/2004

GREENBLUM & BERNSTEIN, P.L.C.
1950 ROLAND CLARKE PLACE
RESTON, VA 20191

EXAMINER

HARTMAN JR, RONALD D

ART UNIT

PAPER NUMBER

2121

DATE MAILED: 09/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/728,958

Applicant(s)

PARK ET AL.

Examiner

Ronald D Hartman Jr.

Art Unit

2121

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/26/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☒ Claim(s) 17-20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-20 are presented for examination.

Claim Objections

2. Claims 4 and 9; "the outdoor temperature" lacks proper antecedent basis.
Claims 14 and 17; "the operation temperature" lacks proper antecedent basis.
Claim 14, the second and third limitations claim the identical same subject matter, just worded in different ways. Therefore there is no need for both limitations since only one is necessary.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:
Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. That is, since the claimed invention does not fall within the useful or technological arts, since pending claim 1 sets forth a method that does not require computer implementation or the use of computer technology in order to accomplish the method, and therefore, claims 1-20 are deemed to be non-statutory.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 6, 8 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohkoshi et al., U.S. Patent No. 5,050,396.

As per claim 1, Ohkoshi teaches a method for operating a multi-type (examiners note: "type" is interpreted to mean "room") air conditioner having an outdoor unit, a distributor and a plurality of indoor units (i.e. Figure 1), the method comprising:

- calculating a total load of the indoor units that are to carry out heating and a total load of units that are to carry cooling (i.e. Figure 3 elements 601 and 602; C7 L67-C8 L12); and
- determining an operation pattern of the outdoor unit according to the total cooling load and the total heating load (i.e. Figure 3 element 604 and C8 L27-38).

As per claims 3 and 8, Ohkoshi further teaches:

- comparing the total cooling load and the total heating load and carrying out heating if the total heating load is greater than the total cooling load, and carrying out cooling if the total cooling load is greater than the total heating load (i.e. C8 L27-38).

As per claims 6 and 11, the recalculation of the total heating loads and the total cooling loads is a feature that the system of Ohkoshi et al is capable of implementing since the purpose of Ohkoshi et al is to allow for automatic switching to occur between cooling and heating modes of operation for an air conditioning system, and this switching would inherently occur over the course of time and therefore the recalculations or further calculations for mode determination must take place in order for the system of Ohkoshi et al to effectively implement the automatic mode switching functions, as described by way of Ohkoshi et al.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkoshi et al., in view of Nakayama et al.

As per claims 2, 7 and 13, Ohkoshi et al. does not specifically teach the use of the capacities in determining the total heating and cooling loads.

Nakayama et al. teaches the use of capacities and temperature differentials for determination of the operation mode of a multi-room air conditioning system (i.e. C8 L43-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the use of the capacities of the indoor units when determining the total heating and cooling loads for the purpose of making sure the system is operating as close to 100% as possible, thereby achieving more efficient heating and cooling of the rooms. Furthermore, it is also noted that although Ohkoshi's combined system (Ohkoshi in view Nakayama) does not specifically disclose the claimed equations for load determinations, the combined system is quite capable of performing this function for the purpose of calculating the total heating and cooling loads and this would have been obvious to one of ordinary skill in the art at the time the invention was made for at least the reasons already set forth above, that is, to provide a very accurate representation of the total heating and cooling loads while also taking into account the affects of the limitations of each indoor unit by using the capacity of each indoor unit, in addition to the temperature differentials for each room, and this would have been obvious to one of ordinary skill in the art at the time the invention was made.

6. Claims 4-5, 9-10, 12 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkoshi et al., as applied to claims 3, 8, 11 above, in view of obviousness.

First, with respect to claims 4, 9 and 15, a feature whereby when the total heating load and cooling load are the same, using an outdoor temperature and a reference temperature to determine the operation of the outdoor unit would have been obvious to one of ordinary skill in the art at the time the invention was made. That is, since Ohkoshi teaches that when the temperature of the outside air is decreased, the condensation temperature of a refrigerant is also reduced which has the affect of degrading the heating capability of the indoor units (i.e. C12 L62-68) and since Ohkoshi also teaches that when the temperature of the outside air is increased, the evaporation temperature of a refrigerant is also increased which has the affect of degrading the cooling capability of the indoor units (i.e. C14 L7-13), a feature whereby a preset value circuit (i.e. Figure 26 elements 647 and 648) is used in conjunction with the outside temperature would have been obvious to one of ordinary skill in the art at the time the invention was made so as to allow for an efficient way of avoiding the aforementioned degradations that can easily occur when the outside temperature rises or lowers beyond or below the value stored in the preset value circuit.

Second, with respect to claims 5, 10 and 16, although Ohkoshi teaches the preset value circuit being set to 5° C or 10° C, Ohkoshi does not teach the preset temperature being specifically 15° C; however this is viewed to be an obvious variation or implementation of Ohkoshi's disclosed system since the preset value is set in accordance to the needs of the system, and since the multi-room air conditioning system may be incorporated in any number of geographic locations, wherein each location may utilize different preset values in order to obtain effective operations of the system, the choice of 15° C appears to represent a design choice and the use of 15° in place of 10° or 5° is believed to be a feature that would have been obvious to one of ordinary skill in the art at the time the invention was made and its incorporation would have been obvious in order to provide a system that may be utilized in a location that is more appropriately suited for a preset temperature other than 5° or 10°.

As per claim 12, although Ohkoshi does not specifically teach recalculating only the total cooling load if the outdoor unit is operating in a cooling mode or only

Art Unit: 2121

recalculating the total heating load if the outdoor unit is operating in a heating mode, the aforementioned limitations represent features that would be obvious to one of ordinary skill in the art at the time the invention was made for the purpose of allowing for a more efficient means of recalculating the operational conditions of the outdoor unit. That is, by allowing for calculations and or recalculations to take place with respect to the current operating mode (heating or cooling only), the amount of necessary calculations is reduced which allows for a more efficient means for controlling the operation of the multi room air conditioning system since less time is needed to for recalculations.

As per claim 14, Ohkoshi further teaches:

- comparing the total cooling load and the total heating load and carrying out heating if the total heating load is greater than the total cooling load, and carrying out cooling if the total cooling load is greater than the total heating load (i.e. C8 L27-38).

Allowable Subject Matter

8. Claims 17-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As per claim 17-20, specifically dependent claim 17, the prior art of record fails to teach or adequately suggest a method for operating a multi-type air conditioner wherein a recalculated total cooling load is calculated by adding the total cooling load of the indoor units *before* change of the operation temperature and an additional cooling load required *following* the change of the operation temperature and the recalculated heating load being calculated by adding the total heating load of the indoor units before change of the operation temperature and an additional heating load required following change of the operation temperature, in combination with the other claimed features and or limitations as claimed by the claimed invention.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronald D Hartman Jr. whose telephone number is 703-308-7001. The examiner can normally be reached on Mon. - Fri., 11:30 am - 8:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on 703-308-3179. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ronald D Hartman Jr.
Examiner
Art Unit 2121



Anthony Knight
Supervisory Patent Examiner
Group 3600